



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/380,994	09/13/1999	MASARU TAKADA	P23128USA	3373
<div>7590 03/23/2007 JOSEPH F POSILLICO SYNNESTVEDT & LECHNER 2600 ARAMARK TOWER 1101 MARKET STREET PHILADELPHIA, PA 191072950</div>			<div>EXAMINER NORRIS, JEREMY C</div> <div>ART UNIT PAPER NUMBER 2841</div>	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/23/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/380,994

Applicant(s)

TAKADA ET AL.

Examiner

Jeremy C. Norris

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7, 10, 15, 21 and 25-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3, 15, 18, 21, 25, 28 and 29 is/are allowed.
- 6) ☒ Claim(s) 4, 7, 10, 26 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892) *
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08) ,
Paper No(s)/Mail Date 11/06.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,132,853 (Noddin) in view of US 5,670,250 (Sanville).

Noddin discloses, referring primarily to figure 1, a printed wiring board comprises an internal insulating substrate (4) having a conductor circuit (6) formed on a surface thereof, an internal insulating layer (3,7) laminated on the surface of the internal insulating substrate, and an external insulating layer (8) laminated on a surface of the internal insulating layer, the internal insulating layer and the external insulating layer having an internal conductor circuit (5) and an external conductor circuit (10) respectively; wherein the internal insulating layer comprising two or more internal insulating layers (3, 7) of glass cloth-reinforced prepreg containing 30 to 70 % by weight of glass cloth (col. 27, lines 15-35) and wherein the external insulating layer has at least one through hole with a plating film formed on a wall of the at least one through hole. Noddin does not specifically disclose that the external insulating layer comprises synthetic resins and inorganic fillers. However, Noddin does teach that the external insulating layer may comprise PTFE with a filler (col. 9, lines 30-40) [claim 4]. It is well known in the art to use inorganic filler in PTFE for printed wiring boards as evidenced by Sanville (col. 4, lines 15-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use inorganic filler in the PTFE external insulating layer in the invention of Noddin as is known in the art and evidenced by Sanville. The motivation for doing so would have been to increase the heat resistance of the board.

Claims 7, 10, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,764,485 (Lebaschi) in view of Sanville.

Art Unit: 2841

Lebaschi discloses, referring primarily to figures 6-7, a method of manufacturing a printed wiring board having a plurality of conductive layers which are built up via insulating layers respectively and are electrically connected to one another by interconnecting through holes (30), the method comprising the steps of: forming conductive layers on a plurality of insulating layers respectively (20-26); laminating and press-bonding the resulting insulating layers to form a multilayer substrate; irradiating a laser beam (col. 5, lines 10-30) on the multilayer substrate at interconnecting through hole-forming portions to define interconnecting through holes through the insulating layers with bottoms defined by the conductive layers (col. 2, lines 45-50) covering the walls of the interconnecting through holes with metal plating films (28); and fusing solder balls (13) against the interconnecting through holes and filling them with solder (15). Lebaschi does not specifically disclose that each of the insulating layers is formed of one of resin base materials containing synthetic resins and inorganic fillers, and cloth base materials containing synthetic resins and inorganic cloth [claim 7]. However, it is well known in the art to add inorganic fillers to resin material as evidenced by Sanville (col. 4, lines 15-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use inorganic filler in the resin layers in the invention of Lebaschi as is known in the art and evidenced by Sanville. The motivation for doing so would have been to increase the heat resistance of the board.

Additionally, the modified invention of Lebaschi teaches wherein the insulating layers are flexible films made of a glass fiber-reinforced resin (col. 2, lines 45-50) [claim 10], wherein the inorganic fillers are selected from a group comprising glass short fibers,

Art Unit: 2841

silica, mica, alumina, and carbon (col. 2, lines 45-50) [claim 26], wherein the cloth base materials are selected from a group comprising glass-fiber cloth, carbon cloth, and aramid cloth (col. 2, lines 45-50) [claim 27].

Allowable Subject Matter

Claims 1-3, 15, 18, 21, 25, 28, and 29 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Claim 1 states the limitation "wherein a central $((n+1)/2$ -th) insulating layer has the second through holes, each of the second through holes having a plating film formed on a wall thereof, said plating film extending to the ones of the conductive layers adjacent the central insulating layer and connecting to a first through hole, whereby warping is prevented from occurring in the printed wiring board". This limitation, in conjunction with the other claimed features, was neither found to be disclosed in, nor suggested by, the prior art. Claim 3 states the limitation "wherein a central $((n+1)/2$ -th) insulating layer has the second through holes, and each of the second through holes has a plating film formed on a wall thereof, said plating film extending to the ones of the conductive layers adjacent the central insulating layer". This limitation, in conjunction with the other claimed features, was neither found to be disclosed in, nor suggested by, the prior art. Claim 15 states the limitation "a metal plating film electrically connecting the annular pad and the covering pad, the metal plating film covering a wall of the interconnecting through hole and the bottom of the interconnecting through hole defined by the covering pad such that the metal plating film has a flat surface at the wall and the

Art Unit: 2841

bottom of the interconnecting through hole". This limitation, in conjunction with the other claimed features, was neither found to be disclosed in, nor suggested by, the prior art.

Response to Arguments

Applicant's arguments with respect to claims 4, 7, 10, 26, and 27 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

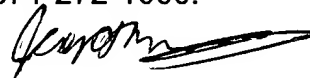
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

Art Unit: 2841

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jeremy C. Norris
Patent Examiner - Technology
Center 2800
Art Unit 2841

JCSN